

New Species of *Helicia* Lour. and *Heliciopsis* Sleumer (Proteaceae) from Borneo

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Abstract

Two new species of *Helicia* Lour. (*H. sessilifolia* and *H. symplocoides*) and two new species of *Heliciopsis* Sleumer (*H. percoriacea* and *H. litseifolia*) are described and illustrated from Borneo.

Introduction

In his accounts of Malesian Proteaceae, Sleumer (1955a, 1955b) recognised eight species of *Helicia* and two species of *Heliciopsis* from Borneo. The revision of the genera *Helicia* Lour. and *Heliciopsis* Sleumer (Proteaceae) for the Tree Flora of Sabah and Sarawak revealed, four new species. *Helicia symplocoides* and *Heliciopsis percoriacea* are endemic to Sabah and Sarawak respectively, while *Helicia sessilifolia* is known from Sabah and Sarawak only. *Heliciopsis litseifolia* is common throughout Borneo (except Brunei), Peninsular Malaysia and Sumatra. These species are described and illustrated below.

Helicia

1. *Helicia sessilifolia* R.C.K. Chung, sp. nov.

Fig. 1

(Latin, sessilis=stalkless, folium=leaf)

Helicia sessilifolia Heliciae maxwellianae similis, sed in ramulis gracilibus, folii margine erecurvata, foliis anguste coriaceis flavido brunnescentibus in sicco, fructu stipitato ellipsoideo-apiculato castanescenti in sicco differt. Typus: Borneo, Sarawak, Limbang Division, Lawas, Ulu Trusan, Bt. Tebunan, 9 May 1986, Bernard Lee S 52436 (holotypus KEP!; isotypi K, L, MO, SAN!, SAR!).

Treelet to small tree, up to 10 m tall. Twigs: youngest parts subangular, older ones terete, light brown, glabrous. Leaves spiral or subopposite; blades broadly oblong to elliptic, rarely obovate, (6–)9–17 x (4.5–)5–8.5 cm, thinly

coriaceous, yellowish brown when dry, not shining, glabrous; base rounded to subcordate, margin entire, apex acute; midrib slightly raised above, prominent below; lateral veins 6–7 pairs, curving and joining near margin, prominent on both surfaces; intercostal veins reticulate, inconspicuous on both surfaces; petioles extremely short, up to 2 mm long, slightly swollen at base, dull brown, glabrous. *Inflorescences* racemose, axillary, solitary, c. 7 cm long, laxly flowered near the base; rhachis terete, c. 1 mm diameter, glabrous; bracts minute, less than 0.5 mm long, glabrous. *Flowers*: pedicels 5–6 mm long, in pairs, not winged, connate up to about 2–3 mm from the base, glabrous; perianth (12–)16–19 mm long, glabrous, limb ellipsoid, 0.8–1.2 mm diameter; anthers 1–1.5 mm long; ovary ovoid, glabrous; style filiform, apex clavate, glabrous; stigma punctiform, terminal, stigmatic surface glandular; disk glands almost entirely connate in a crenulate ring. *Fruits* ellipsoid, 4–4.5 x 2.4–2.7 cm, slightly oblique, glabrous, chesnut-brown when dry, apiculum 1–4 mm long, contracted into a stipe of c. 3 mm long; pericarp smooth, 2.5–3 mm thick; fruit stalk unknown.

Distribution: Endemic to Borneo. Rare in Sarawak and Sabah, known in Sarawak only from Bt. Tebunan, Lawas (S 52434 and S 52436) and in Sabah from Tambunan (SAN 60837 and SAN 111305). Not yet recorded from Brunei and Kalimantan.

Ecology: Mixed dipterocarp forest, up to 900 m.

Notes: This species is similar to *H. maxwelliana*, from which it is distinguished by its slender twigs (stout in *H. maxwelliana*), non-recurved leaf-margin (curled inwards in *H. maxwelliana*), thinly coriaceous leaves (thickly coriaceous in *H. maxwelliana*) which turn yellowish brown when dry (olivaceous-yellowish to dark brown in *H. maxwelliana*), long-apiculate and stiped ellipsoid fruit, which turns chesnut-brown when dry (subglobose fruit, without apiculum and stipe, and black when dry in *H. maxwelliana*). The new species is apparently confined to hill mixed dipterocarp forest. In contrast, *H. maxwelliana* is restricted to submontane forest.

Specimens Examined: BORNEO. SARAWAK: Limbang Division—Lawas, Ulu Trusan, Bt. Trusan, 9 May 1986, Bernard Lee S 52434 (K, KEP!, L, MO, SAN!, SAR!), S 52436 (K, KEP!, L, MO, SAN!, SAR!). SABAH: Pedalaman District—Tambunan, 21 July 1984, Amin & Suali SAN 60837 (AA, K, KEP!, L, SAN!, SAR!, SING!), Rafflesia FR, 7 Sept. 1985, Leopold Madani & Ismail SAN 111305 (K, KEP!, SAN!).

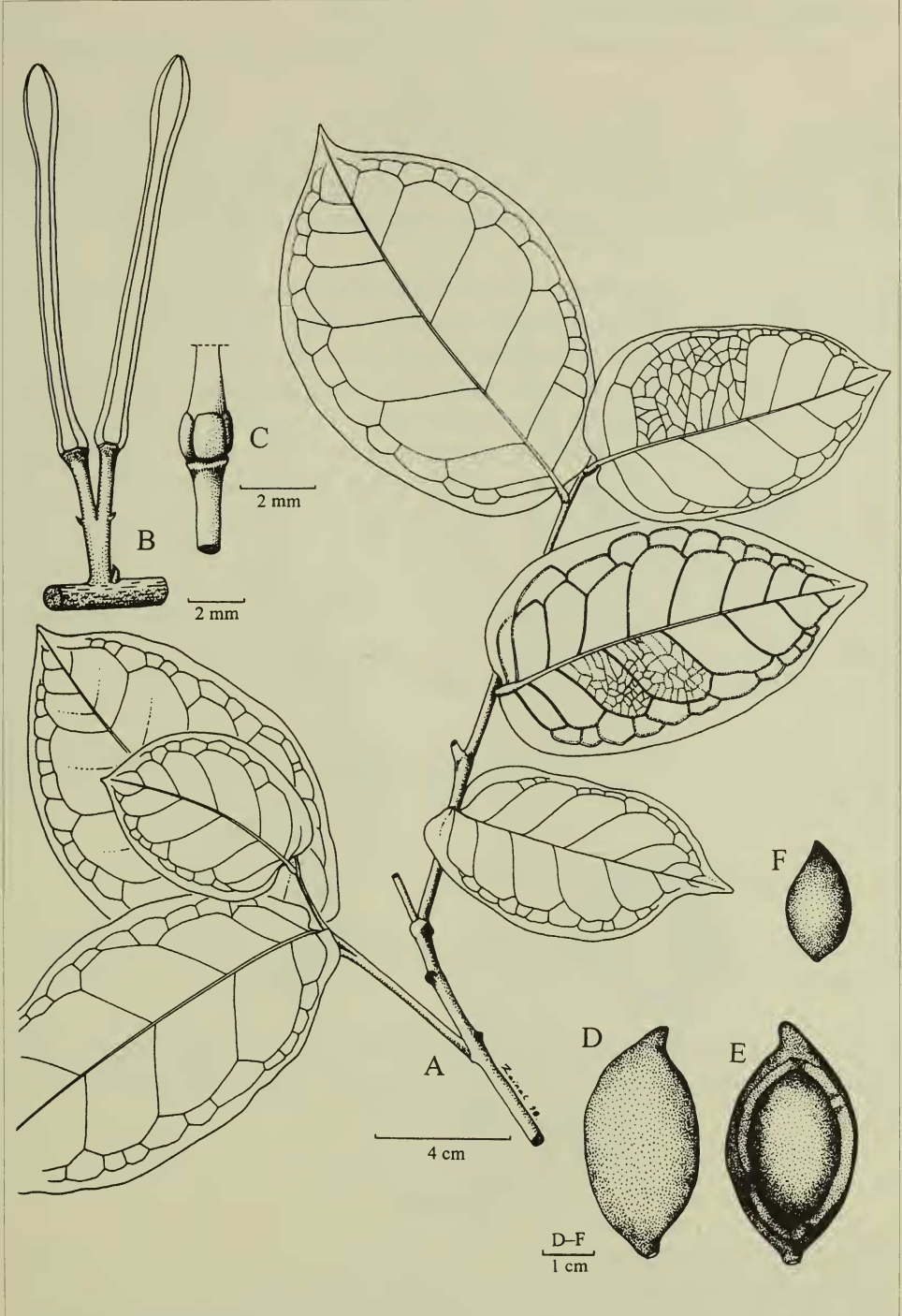


Figure 1. *Helicia sessilifolia*. A, leafy twig; B, flower buds; C, base of ovary with disk glands; D, fruit; E, fruit in longitudinal section; F, seed. (A–C from S 52436, D–F from S 52434.)

2. *Helicia symplocoides* R.C.K. Chung, sp. nov.

Fig. 2

(Greek, -oides=resembling; with leaves resembling those of *Symplocos*)

Hac species nova a generis speciebus aliis foliis crasse coriaceis c. 10 cm longis 5 cm latis, apice emarginato vel obtuso, basi decurrenti cuneata, marginibus recurvatis, fructibus minutis ad 1.7 cm longis 1.4 cm latis differt. Typus: Borneo, Sabah, Pantai Barat District, Mt. Kinabalu, Mesilau Cave, 1 April 1964, *Chew & Corner RSNB 4786 (holotypus SAN!; isotypi K, L).*

Tree 15 m tall, 25 cm diameter. *Twigs* terete, grey or greyish brown, glabrous with distinct leaf scars up to 3 mm diameter. *Leaves* spiral; blades obovate, 5–10 x 2.5–5 cm, thickly coriaceous, deep green above, brown below, not shining, glabrous; base cuneate, decurrent, margin entire or occasionally with 1–3 minute teeth in the upper half, recurved, apex obtuse or emarginate; midrib raised above, prominent below; lateral veins 6–8 pairs, curving near the margin and joining with next one to form looped intramarginal veins, visible below, inconspicuous above; intercostal veins inconspicuous on both surfaces; petioles 2–4 x 1.5–2 mm, swollen and wrinkled at the base, dark brown when dry, glabrous. *Flowers* not known. *Fruits* ellipsoid to broadly ellipsoid, 1.5–1.7 x 1.2–1.4 cm, oblique, glabrous, black when dry, shortly apiculate, apiculum c. 1 mm long, stipe c. 2 mm long; pericarp smooth, 0.8–1.5 mm thick; fruit stalk 5–7 x 1.5–2 mm.

Distribution: Recorded only from Sabah where it is known from a single collection, *Chew & Corner RSNB 4786*, from Mt. Kinabalu, Mesilau Cave, on ultramafic soil.

Ecology: Submontane forest at 1850 m.

Notes: The leaves of the new species resemble those of *Symplocos* Jacquin (Symplocaceae).

Specimens Examined: BORNEO. SABAH: Pantai Barat District—Mt. Kinabalu, Mesilau Cave, 1 April 1964, *Chew & Corner RSNB 4786* (K, L, SAN!).

Heliciopsis

1. *Heliciopsis litseifolia* R.C.K. Chung, sp. nov.

Fig. 3

(With leaves resembling those of *Litsea*, Lauraceae)

Heliciopsis litseifolia Heliciopsidi montanae proxime affinis, a posteriore foliis simplicibus anguste coriaceis basi attenuata decurrenti, apice acuto vel

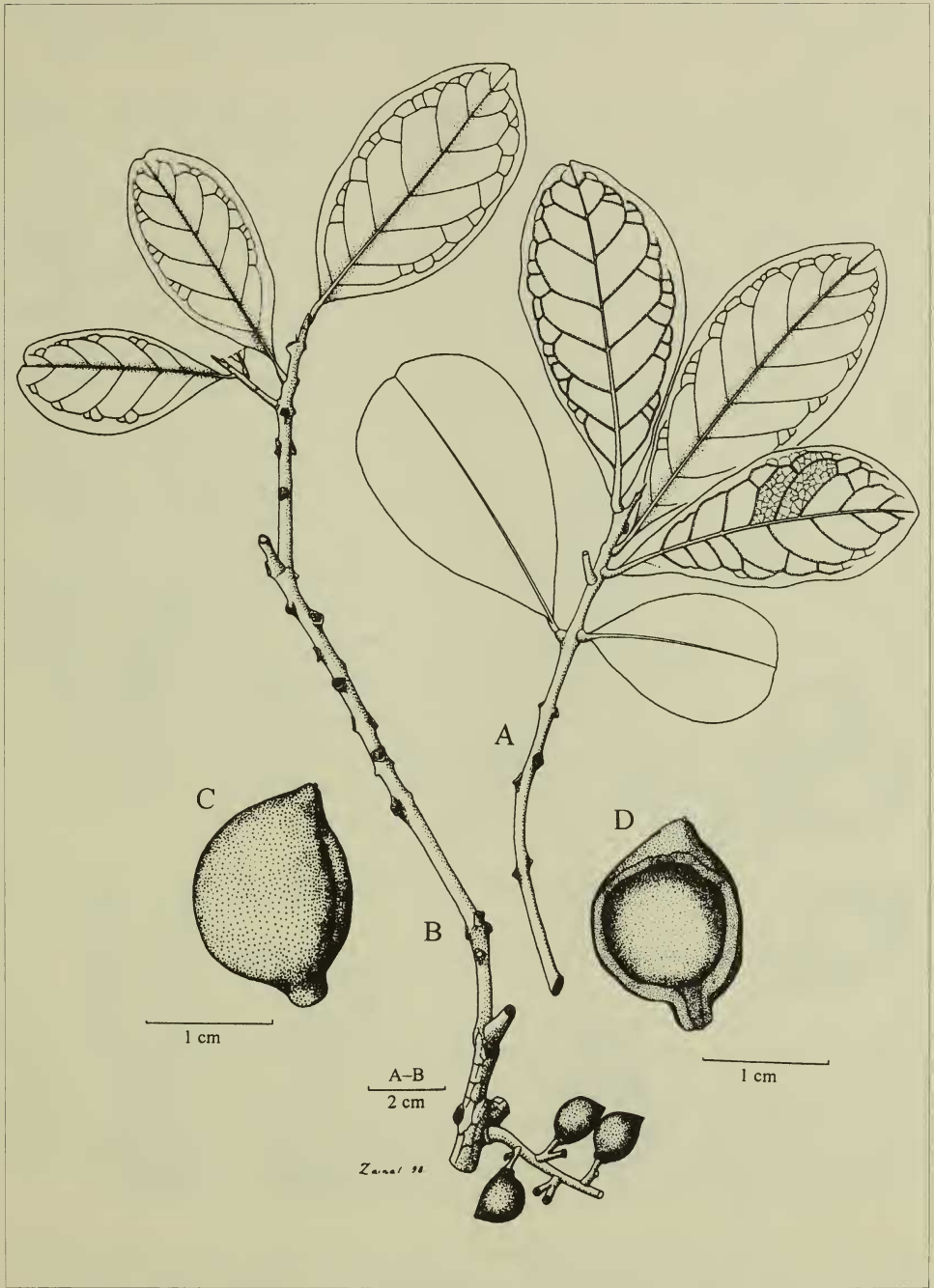


Figure 2. *Helicia symplocoides*. A, leafy twig; B, fruiting leafy twig; C, fruit; D, fruit in longitudinal section. (From RSNB 4786.)

acuminato, marginibus integris, petiolis brevibus ad 2 cm longis distinguendam. Typus: Borneo, Sarawak, Kapit Division, Belaga, 2 Sept. 1958, *Jacobs 5401 (holotypus SAR!; isotypi B, CANB, G, K, L, S, US).*

Small to medium-sized tree, 6–25 m tall, 10–25(–50) cm diameter. *Twigs:* youngest parts angular, older ones terete, grey-brown, glabrous. *Mature leaves* elliptic to broadly elliptic, 10–25 x 4–11.5 cm, thinly coriaceous, yellowish green to olivaceous brown when dry, not shining, glabrous; base attenuate, decurrent, margin entire, apex acute or acuminate; midrib slightly raised above, prominent below; lateral veins 5–6 pairs, curved upwards and joining near the margin to form loops, prominent on both surfaces; intercostal veins reticulate, faint above, typically visible below; petiole (0.5–)1–2.5 cm long, swollen at the base, black and rarely yellowish brown when dry, glabrous. *Inflorescences* racemose, axillary or born on older, leafless branches, solitary, 12–26 cm long, laxly flowered except for about 3 cm from the base; rhachis 1–1.5(–2) mm diameter, rufous pubescent, soon glabrescent; bracts subulate, 1–2 mm long, persistent, rufous pubescent. *Flowers:* pedicels 5–8 mm long, mostly in pairs, connate up to 3–5 mm from the base, rufous pubescent; perianth 8–10 mm long, rufous pubescent to glabrescent, limb clavate, *c.* 1.5 mm diameter; anthers 1–1.5 mm long; ovary glabrous; style filiform, clavate towards the apex, glabrous; stigma discoid, lateral, stigmatic surface glandular, with distinct cleft; disk glands truncate, free, spaced. *Fruits* cylindrical ellipsoid, (2.7–)3–3.5(–3.8) x (1.7–)2–2.2(–2.5) cm, smooth, shining black when dry; exocarp leathery, *c.* 1 mm thick; mesocarp built up by radial, soft brown fibres *c.* 2.5 mm long; endocarp woody, thin; fruit stalk 10–12 x 3–4 mm.

Distribution: Sumatra, Peninsular Malaysia and Borneo.

Ecology: Lowland and hill mixed dipterocarp forest, up to 900 m.

Notes: In Borneo, the leaf and petiole characters are rather variable. In *Othman Haron S 29994, Sumbing Jimpin SAN 110338, and Church 173*, the leaves range from 16–25 cm long and 9–11.5 cm wide, and the petioles from 2–2.5 mm in diameter. Furthermore the fruits in *de Wilde & de Wilde-Duyffjes 16611* from Sumatra, are larger (*c.* 4.5 x 3.5 cm) than those of the Bornean specimens and the endocarp is thicker (*c.* 3 mm).

Specimens Examined: SUMATRA. Atjeh, G. Leuser Nature Reserve, G. Mamas, 5 May 1975, *de Wilde & de Wilde-Duyffjes 16611* (BO, KEP!, L). PENINSULAR MALAYSIA. TERENGGANU—Ulu Setiu FR, 4 Aug. 1977, *Chan FRI 23980* (K, KEP!, L, SING!). JOHORE—Ulu Sg. Anak Endau, 3 April 1968, *Cockburn FRI 8118* (K, KEP!, SING!). BORNEO.

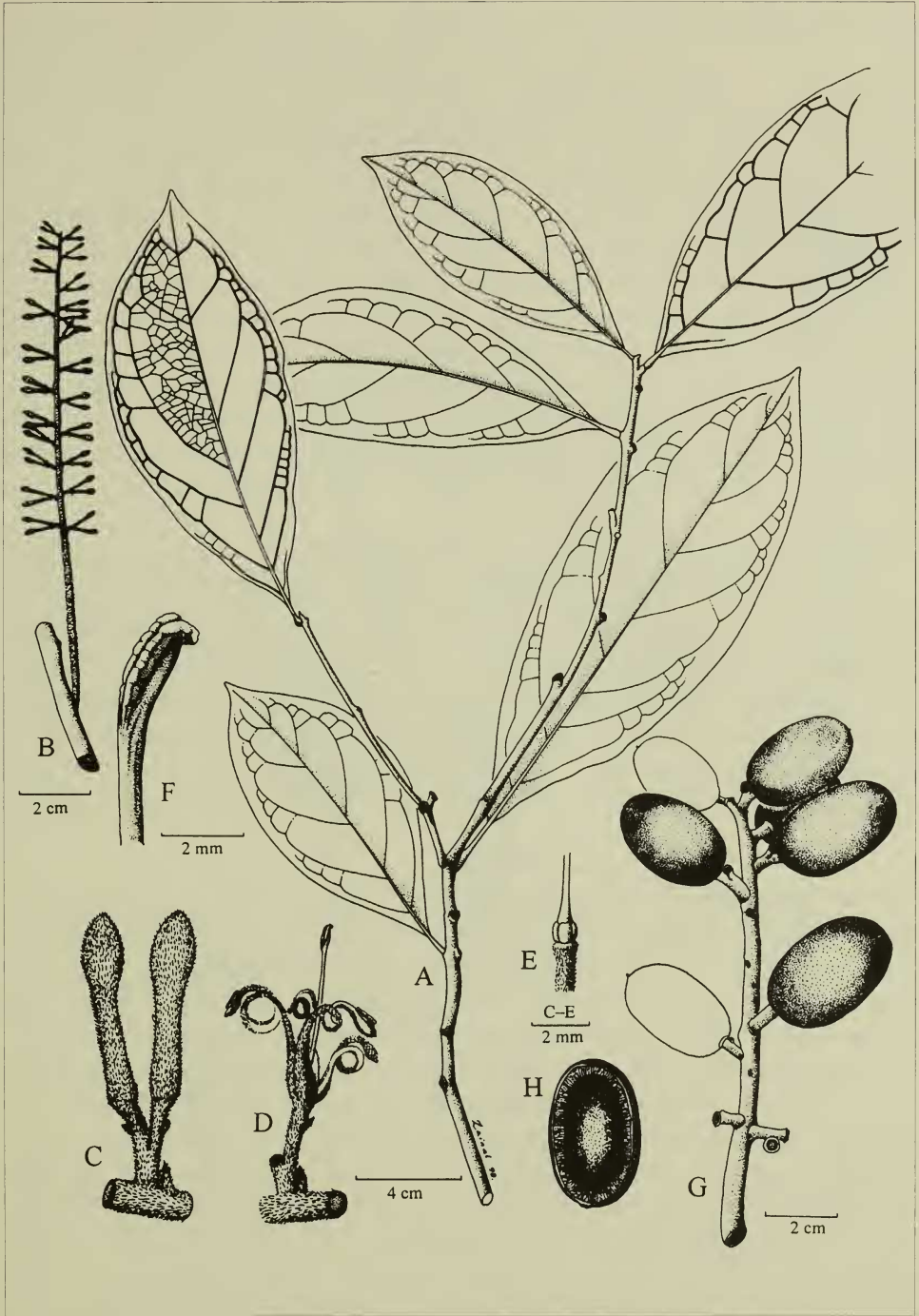


Figure 3. *Heliciopsis litseifolia*. A, leafy twig; B, male inflorescence; C, male flower buds; D, open female flower; E, base of ovary with disk glands; F, stigma; G, infructescence; H, fruit in longitudinal section. (A, G-H from SAN 67659, B-C from S 34497, D-F from Jacobs 5401.)

SARAWAK: Kuching Division—Sematan, G. Pueh, 23 June 1974, *James et al. S 34497* (A, K, L, MO, SAN!, SAR!). Samarahan Division—Serian, Sabal FR, 14 May 1974, *Tong S 34320* (K, KEP!, L, MO, SAN!). Sibuluan Division—Anap, Ulu Muput Kanan, Bt. Kemantan, 12 Oct. 1963, *Chai S 19547* (A, BO, K, L, MEL, SAN!, SAR!, SING!), Ulu Kakus, 9 March 1970, *Othman Haron S 29994* (A, K, KEP!, L). Kapit Division—Belaga, Rajang R., 2 Sept. 1958, *Jacobs 5401* (B, CANB, G, K, L, SAR!, SING!, US), Batu Laga, 4 Sept. 1984, *Abg. Mohtar S 48191* (K, KEP!, L, MO, SAN!, SAR!). SABAH: Pedalaman District—Keningau, Pensiangan FR, 16 Oct. 1985, *Sumbing Jimpin SAN 110338* (SAN!). Tawau District—Tawau, Sg. Pang Burong FR, 17 July 1969, *Leopold Madani & Saikeh SAN 67659* (K, L, SAN!, SAR!), Kinabutan Kecil, 20 May 1963, *Aban Gibot SAN 35872* (SAN!, SAR!). KALIMANTAN: Kalimantan Barat—Sintang, Bt. Baka NP, 17 Oct. 1993, *Church 173* (A, BO, KEP!). Kalimantan Tengah—Ulu Barito, 22 June 1990, *Ridsdale PBU 595* (BO, KEP!, L).

2. *Heliciopsis percoriacea* R.C.K. Chung, sp. nov.

Fig. 4

(Latin, per=exceedingly, coriaceus=leathery, referring to leaves)

Heliciopsidi montanae similis, foliis late ellipticis, petiolis glabrescentibus, pedicellis 8–10 mm longis, periantho 12–15 mm longo limbo c. 2.5 mm diam. distinguendam. A Heliciopside litseifolia in foliis crasse coriaceis, apice obtuso, petiolis perianthiis longioribus differt. Typus: Borneo, Sarawak, Kuching Division, Lundu, G. Pueh, 4 Oct. 1985, Othman Ismawi et al. S 49967 (holotypus KEP (Sheet 1)!; isotypi K, KEP (Sheet 2)!, L, MO, SAN!, SAR!)

Medium-sized tree, 21 m tall, 36 cm diameter. Twigs terete, greyish brown, rufous tomentose when young, soon glabrous. Mature leaves broadly elliptic, (10–)12–18(–21) x (7–)8–11(–12.5) cm, thickly coriaceous, yellowish olivaceous or yellowish brown when dry, shining above, glabrous; base acute, margin entire, recurved, apex obtuse; midrib slightly raised above, distinctly prominent below, rufous tomentose, becoming glabrescent; lateral veins 7–8 pairs, curving and joining near the margin, slightly raised above, distinctly prominent below; intercostal veins reticulate, prominent on both surfaces; petioles 3.5–4.5 x 2.5–3 cm, rufous tomentose when young, glabrescent. Inflorescences racemose, solitary on older, leafless branches, 26–28 cm long, laxly flowered except for 1–2 cm from the base; rhachis terete, c. 2.5 mm diameter, rufous tomentose; bracts subulate, c. 1 mm long, persistent, rufous tomentose. Flowers (male): pedicels 8–10 mm long, in pairs, connate up to 4–6 mm from the base, rufous tomentose; perianth 12–15 mm long, rufous tomentose, limb ellipsoid, c. 2.5 mm diameter; anthers c. 2 mm long; disk glands ovate, free, slightly distant from each



Figure 4. *Heliciopsis percoriacea*. A, leafy twig; B, male inflorescence; C, longitudinal section of male flower. (From S 49967 (Sheet 1).)

other. *Flowers (female) and fruits* not known.

Distribution: Endemic to Sarawak, it is very rare, once collected from G. Pueh. No record from Sabah, Brunei and Kalimantan.

Ecology: In Heath forest.

Specimens Examined: BORNEO. SARAWAK: Kuching Division—Lundu, G. Pueh, 4 Oct. 1985, *Othman Ismawi et al. S 49967* (K, KEP (2 Sheets)!, L, MO, SAN!, SAR!).

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